

## Genwei Zhang

CS Ph.D. candidate at the New Jersey Institute of Technology, with research experience in the Solar Physics Lab and the Intelligent Transportation Lab. My work focuses on integrating data-driven learning with structured reasoning, combining supervised and reinforcement learning methods. Applications include intense solar flare prediction and dynamic traffic signal control. My goal is to bridge theoretical research and real-world problem solving through explainable and practical AI systems.

## CONTACT

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**Address:** Newark, NJ, 07103

**Imigration Status:** F1

**Language:** English, Mandarin, Japanese (learning)

## EDUCATION

<b>Computer Science Ph.D. (in progress)</b> - New Jersey Institute of Technology, US	2021-present
Supervised & Reinforcement Learning, Structured reasoning, Image Segmentation, GNN, Optimization	CGPA: 4.0
<b>Computer Science M.S.</b> - New Jersey Institute of Technology, US	2020-2021
Web Design, Database Design, Software Engineering, Image Processing, Data Mining	CGPA: 3.9
<b>Industrial Design B.E.</b> - Hefei University of Technology, China	2011-2016
Graphic Design, Product Design, UI Design, 3D Modeling	CGPA: 2.8

## PUBLICATION

Abduallah, Y., Wang, J. T. L., Bose, P., **Zhang, G.**, Gerges, F., & Wang, H. (2022). *Forecasting the Disturbance Storm Time Index with Bayesian Deep Learning*. The International FLAIRS Conference Proceedings 35, 2022  
<https://doi.org/10.32473/flairs.v35i.130564>

Abduallah, Y., Wang, J. T. L., Bose, P., **Zhang, G.**, Gerges, F., & Wang, H. (2022). *A Deep Learning Approach to Dst Index Prediction*. arXiv preprint arXiv:2205.02447., 2022  
<https://arxiv.org/abs/2205.02447>

Jiang, H., Li, Q., Hu, Z., Liu, N., Abduallah, Y., Jing, J., **Zhang, G.**, Xu, Y., Hsu, W., Wang, J. T. L., & Wang, H. (2022). *A Deep Learning Approach to Generating Photospheric Vector Magnetograms of Solar Active Regions for SOHO / MDI Using SDO / HMI and BBSO Data*. arXiv preprint arXiv:2211.02278., 2022  
<https://arxiv.org/abs/2211.02278>

## PROJECT

### Dynamic Flow–Driven Uncertainty Modeling

VisionLight is a reinforcement learning framework for traffic signal control that uses real-time video instead of simulator data, combining entropy-based attention and multi-agent coordination to handle uncertainty and enable robust, real-world deployment.

### Intense flare duration origin tracing

A transformer based modeling trained on solar magnetogram data (2010–2022) reveals that single-polarity magnetic areas, not polarity inversion lines, are the main factor influencing intense solar flare duration.

### Image generation with evolutionary algorithm

A mutated evolutionary algorithm evolves 100 colored triangles whose positions and colors mutate each generation to minimize pixel-wise differences and gradually recreate a target image.

### RNA sequence auto label with GNN

A customized Graph Neural Network learns relationships among connected RNA sequences to predict missing labels and complete the graph's annotation.

### DQN driven Reinforcement Learning for Traffic Light Control simulation

A customized DQN-based traffic control model trained on real-world intersection data, using inputs such as queue length, vehicle count, signal phase, waiting time, and position matrix, with pretraining on 20k+ simulated steps before 78k+ real traffic training steps.

### Online instant messaging App

An Android instant messaging app built with Java and Firebase, supporting user accounts, friend requests, real-time chat, chat history, and account management.

### XPBD based cloth simulation

A web-based interactive cloth simulation built using the XPBD physics technique, demonstrating realistic cloth behavior and user interaction in real time.

### Physical based rendering practices

A series of physically based rendering projects built from scratch, covering Monte Carlo path tracing, Blinn-Phong shading, normal mapping, ray tracing, and acceleration grid optimization.

### Auto Aim-Assist System for Archery in Motion Game

A YOLO-based vision system that detects targets from gameplay screenshots and automatically adjusts vertical and horizontal view angles via multithreaded Python control, enabling real-time aim assistance for archery in Zelda: TOTK.

**Project display Page (partial display):** <https://genwei-zhang.github.io/resume/>

**GitHub:** <https://github.com/Genwei-Zhang>

## PROFESSIONAL SERVICE

### Reviewer

Association for the Advancement of Artificial Intelligence (**AAAI**)

International Conference on Learning Representations (**ICLR**)

International Joint Conference on Artificial Intelligence (**IJCAI**)

Neural Information Processing Systems (**NeurIPS**)

## ACADEMIC AWARD

**Excellence in Teaching Award** by Teaching Assistant

YWCC, NJIT 2024

## TEACHING EXPERIENCE

**Instructor**, CS 114 - Introduction to Computer Science II, NJIT

2025-present

Runing a large course section with 70+ registered students

**Teaching Assistant**, CS 435 - Advanced Data Structures and Algorithm Design, NJIT

2021-2025

Give lecture, Hold recitation hour & office hour, Grading

## WORKING EXPERIENCE

**Graphic Designer & Education Consultant - Zhongzhi Education Inc., China**

2017-2018

Graphic Designer:

- Pamphlet, Poster, Questionnaire Page, Document Format Drafting and WeChat App Design

Education Consultant:

- Highly Personalized Career Plan, Abroad College Program Consultant, Visa Specialist

**Game Designer (non programming) - Hefei JoyMeng Ltd., China**

2016-2017

- Game Sytem, Game Level, Game Numerical Design, Unity, User Scenario Simulation